

Serial No.: 09/850,040

Attorney Docket No.: 2001P08145US

REMARKS

Upon entry of the instant Amendment, claims 1-5, 8-18, and 22-32 are pending. Claims 6-7 and 19-21 were withdrawn subject to a restriction requirement. Claim 5 has been amended to overcome the Section 112 rejection. Claims 31 and 32 have been added to more particularly point out Applicants' invention.

Claim 5 was rejected under 35 U.S.C. 112, second paragraph, because of an alleged lack of sufficient antecedent basis. Claim 5 has been amended to depend from claim 4 and to recite "low," "middle," and "high" bands. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection.

Claims 1-2, 9-10, 22-26 were rejected under 35 U.S.C 102(b) as being anticipated by Nishiguchi et al., U.S. Patent No. 5,664,052 ("Nishiguchi"). In order for there to be anticipation, each and every element of the claimed invention must be present in a single, prior reference. Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Nishiguchi.

As discussed in the Specification, embodiments of the present invention relate to innovative techniques for enhancing the sound quality of computer telephony systems. In general, digital signals including telephony sounds are converted from the time domain to the frequency domain. If noise is detected in the frequency domain conversion of the digital signals, the noise is removed utilizing a filter. The noise detection and filtering are preferably performed in software, which can provide the advantages that the enhanced audio quality comes at a relatively inexpensive cost and can be flexible for very diverse environments.

In contrast, Nishiguchi provides for a time domain standard deviation bias, effective value bias or peak value bias analysis in conjunction with a frequency domain "energy distribution" analysis in which the ratio ranges of "high frequency" and "low frequency" energy values is analyzed. However, Nishiguchi does not appear to

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"detect[] whether noise is present in the frequency domain conversion of the digital signals," as recited in claim 1, or "detect[] whether noise is present in the frequency domain conversion of the digital signals if the amplitude of sounds in a first band in the frequency domain conversion of the digital signals cross a threshold over a time interval," as recited in claim 22.

Further, while the Official Action asserts that Nishiguchi employs "blocks" in the frequency domain, in fact, these are merely time domain sample sets, and not frequency "bands" as recited in the claims at issue.

As such, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims.

Claims 1-2 were rejected under 35 U.S.C 102(b) as being anticipated by Seki et al., U.S. Patent No. 5,677,987 ("Seki"). In order for there to be anticipation, each and every element of the claimed invention must be present in a single, prior reference. Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Seki.

As noted above, aspects of the present invention relate to innovative techniques for enhancing the sound quality of computer telephony systems and, particularly, to noise removal in such systems. In contrast, Seki does not appear to relate to noise removal or to a computer telephony system (i.e., does not relate to "telephony sounds" as recited in the claims at issue). Instead, Seki relates to feedback removal in a loudspeaker system. Because Seki does not relate to noise removal, the Examiner is respectfully requested to reconsider and withdraw the rejection.

Claims 1, 2, and 11 have been rejected under 35 U.S.C. 102(e) as being anticipated by deVries, U.S. Patent No. 6,289,309 B1 ("deVries"). In order for there to be anticipation, each and every element of the claimed invention must be present in a single, prior reference. Applicants respectfully submit that the claimed invention is not

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taught, suggested, or implied by deVries. As noted above, aspects of the present invention relate to innovative techniques for enhancing the sound quality of computer telephony systems and, particularly, to noise removal in such systems. Thus, claim 1 relates to telephony sounds in a computer telephony system and recites "detecting whether noise is present in the frequency domain conversion of the digital signals."

In contrast, deVries appears to relate primarily to hands-free control of a mobile telephone and, in particular, to the use of the signal power spectrum in noise suppression. That is, rather than "detecting whether noise is present in the frequency domain conversion of the digital signals" as recited in the claims at issue, deVries employs the power spectrum (the DFT multiplied by its complex conjugate). As such, Applicants respectfully submit that this element, at least, is missing. Consequently, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims.

Claims 16, 18, 27, 29-30 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Graupe et al., U.S. Patent No. 4,185,168 ("Graupe") in view of deVries. Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Graupe or deVries, either singly or in combination.

As noted above, aspects of the present invention relate to innovative techniques for enhancing the sound quality of computer telephony systems and, particularly, to noise removal in such systems. Thus, claim 16 recites "detecting whether noise is present in the frequency domain conversion of the digital signals if the amplitude of sounds in a middle band exceed the amplitude of sounds in low and high bands by a predetermined amount;" and claim 27 recites "computer code that detects whether noise is present in the frequency domain conversion of the digital signals if the amplitude of sounds in a middle band exceed the amplitude of sounds in low and high bands by a predetermined amount."

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In contrast, as acknowledged in the Official Action, Graupe does not provide a frequency domain conversion. Instead, deVries is relied on for such teaching. However, as noted above, deVries relates to a power spectrum analysis, and not to the frequency domain analysis of the signal. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims.

Claims 3, 4, 8, 12, 13, and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiguchi. For reasons similar to those discussed above in the Section 102 discussion, Applicants respectfully submit that Nishiguchi also does not teach, suggest or imply the invention of these claims. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims.

Claims 5 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiguchi in view of Harris et al., U.S. Patent No. 4,255,620 ("Harris") or Fielder, U.S. Patent No. 5,752,225 ("Fielder"). Applicants respectfully submit that the claimed invention is not taught, suggested, or implied by Nishiguchi, Harris, or Fielder, either singly or in combination.

Nishiguchi has been discussed above. Harris and Fielder are relied on for allegedly teaching three frequency bands. However, like Nishiguchi, Harris and Fielder fail to teach a frequency domain analysis for noise reduction, as generally recited in the claims at issue. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims.

Newly added claims 31-32 are believed allowable for reasons similar to those discussed above.

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For all of the above reasons, Applicants respectfully submit that the application is in condition for allowance, which allowance is earnestly solicited. If any fees are due in connection with the filing of this amendment, the Commissioner is authorized to charge such fees to Deposit Account 19-2179.

Respectfully submitted,



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